

1 **SUPPLEMENTARY DATA**

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Genotype		Jejunum	Terminal Ileum	Ascending Colon	Descending Colon
WT	I _{sc} (μA.cm ⁻²)	37.2 ± 5.6 (n=8) ⁺⁺	35.2 ± 6.9 (n=8) ⁺⁺	71.0 ± 4.7 (n=8)	45.3 ± 2.4 (n=80) ⁺⁺
	TER (Ω.cm ²)	23.9 ± 2.0 (n=8)	17.8 ± 2.5 (n=8)	23.6 ± 1.6 (n=8)	27.6 ± 1.5 (n=80)
GPR119 ^{-/-}	I _{sc} (μA.cm ⁻²)	57.8 ± 5.8 (n=8) *	51.4 ± 5.8 (n=8)	64.0 ± 8.0 (n=8)	53.2 ± 2.8 (n=88) *
	TER (Ω.cm ²)	25.9 ± 3.4 (n=8)	20.6 ± 4.2 (n=8)	36.9 ± 4.1 (n=8) *	32.4 ± 1.6 (n=88) *

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4 **Supplementary Table 1. Electrophysiological parameters (Isc and TER) for different intestinal tissues**

5 **from WT and GPR119^{-/-} mice.** Values are the mean ± SEM with statistical differences as shown. ⁺⁺ *P* <

6 0.01 compared with WT ascending colon (one-way ANOVA with Tukey's post-test). * *P* < 0.05 compared

7 with WT values in the same GI area (Student's unpaired t-test).

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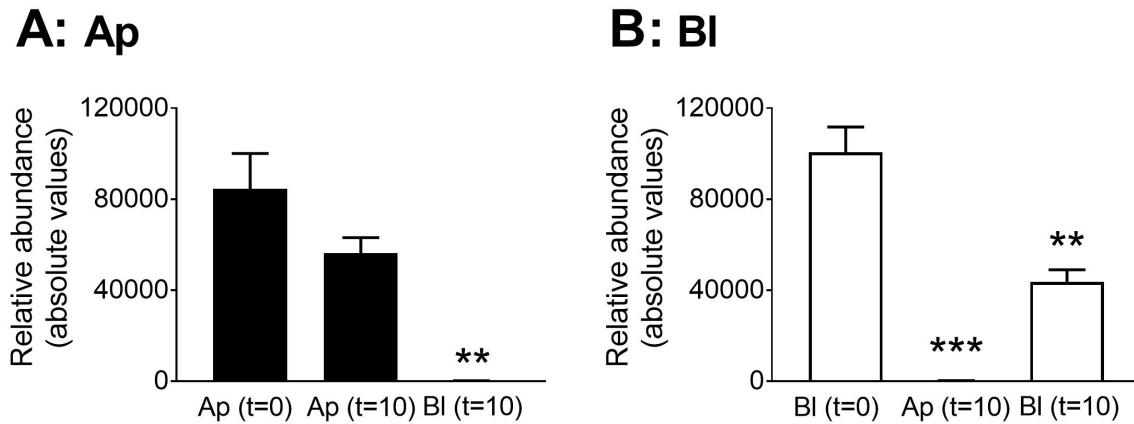
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1 Supplementary Figure 1

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4 **Supplementary Figure 1. LC-MS/MS analysis of apical and basolateral AR440006.** Assays were

5 started with additiona of AR440006 (1 μ M; t = 0 min) to either the apical (Ap) or basolateral (BI)

6 reservoir. After 10 min samples were taken from both Ap and BI reservoirs, diluted in 0.1% formic

7 acid in 50% methanol and analysed by LC-MS/MS. Data from 3 different colonic specimens (mean \pm

8 1 SEM) shows the relative abundance of AR440006 (calculated from the area of peaks with retention

9 time of 4.2 min and product ion m/z 280) compared with initial levels of AR440006 at t = 0 min,

10 using ANOVA with Dunnett's post-test (** $P < 0.01$, *** $P < 0.001$).

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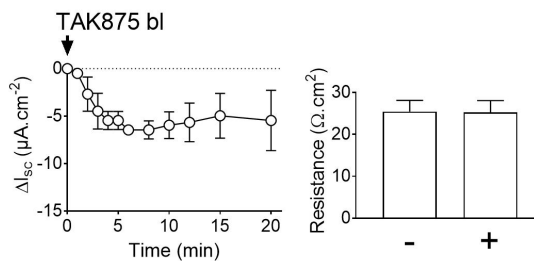
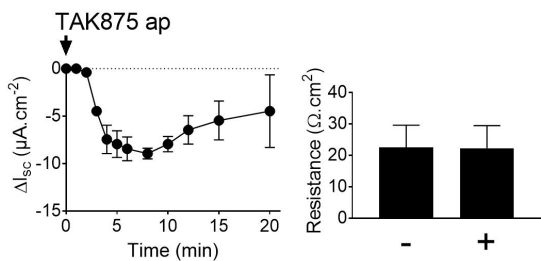
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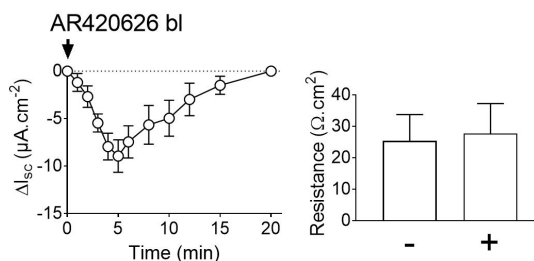
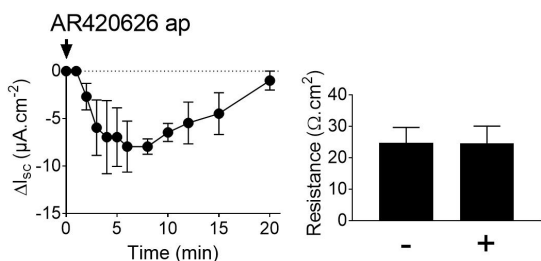
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1 **Supplementary Figure 2.**

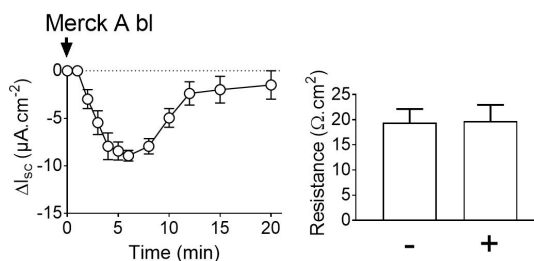
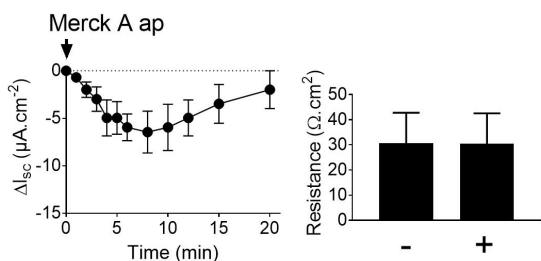
A FFA1



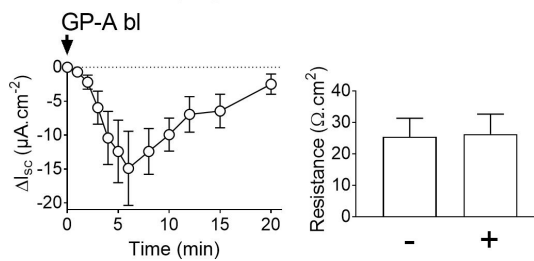
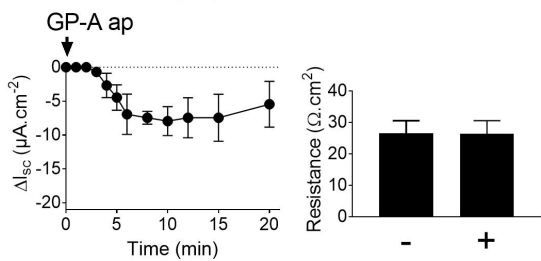
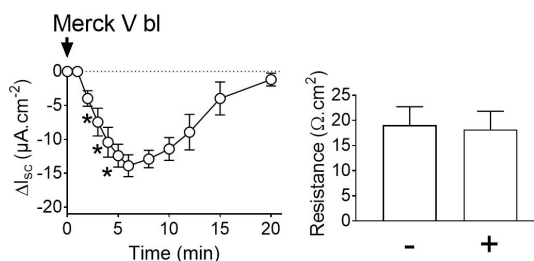
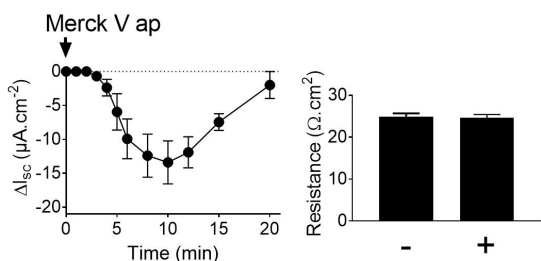
B FFA3



C FFA4



D TGR5



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2 **Supplementary Figure 2.** Agonist time-courses with accompanying TER measurements in WT
3 mouse colon mucosa after either apical (ap, black symbols) or basolateral (bl, white symbols) drug
4 addition at $t = 0$ min (' - ') and at peak response ($t = 5 - 10$ min; ' + '). Agonists were TAK875 ($3 \mu\text{M}$),
5 AR420626 (100 nM), Merck A ($10 \mu\text{M}$), Merck V ($1 \mu\text{M}$) and, the TGR5 agonist GP-A ($3 \mu\text{M}$) as
6 used by Brighton *et al.* (33). Data are the means ± 1 SEM ($n = 4$ throughout) and statistical
7 differences between basolateral and apical time-points for the same agonist (see Merck V) or between
8 TER values, were determined using Student's unpaired *t*-test (* $P < 0.05$).

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